

## CLAIMS

1. A tool module interconnect for interconnecting adjacent tool modules for insertion in a drill string, said interconnect comprising:

5 an interconnect body;

a means for connecting said interconnect body to adjacent tool modules, wherein said means for connecting said interconnect body to adjacent tool modules comprises at least one rotatable threaded sleeve, said rotatable threaded sleeve being adapted for threaded connection to one of  
10 said adjacent tool modules;

an interlock on an end of said interconnect body corresponding to said rotatable threaded sleeve, said interlock engaging said interconnect body end with one of said tool modules; and

a wire harness in a longitudinal bore of said interconnect body having  
15 at each terminal end connectors where each said connector is floating, unrestricted and accessible from its respective end of the interconnect body; said interconnect serving to separate the connector from the interconnect body to reduce the transfer of operational stresses and shock to the electrical components of the interconnect.

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2. The tool module interconnect of claim 1 further comprising at least one terminal end connector sleeve to maintain said terminal end connectors in position, thus preventing disconnection.

25 3. The tool module interconnect of claim 1 wherein said wire harness is retractable.

4. The tool module interconnect of claim 3 wherein said wire harness is coiled to promote retraction of said wire harness.

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5. The tool module interconnect of claim 4 wherein the coiled wire harness retracts the floating interconnect plug into the longitudinal bore of the interconnect body.

6. The tool module interconnect of claim 1 wherein said means for connecting said interconnect body to adjacent tool modules comprises a fixed threaded region on an end portion of the interconnect body opposite that of said at least one rotatable threaded sleeve.

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7. The tool module interconnect of claim 1 wherein a combination of O-rings are used to seal said interconnect body to prevent thereby ingress of drilling mud into said longitudinal bore.

10 8. The tool module interconnect of claim 1 wherein the rotatable threaded sleeve is spaced from one end, retained on said interconnect body by way of c-clips.

15 9. The tool module interconnect of claim 8 further comprising a retainer ring to prevent said c-clips from expanding and disconnecting from the interconnect body.

20 10. The tool module interconnect of claim 1 wherein the interconnect body is a unitary structure extending from one connector end to the other connector end.

11. The tool module interconnect of claim 1 wherein said interlock is a castellated end for said interconnect body end.

25 12. The tool module interconnect of claim 11 wherein the castellated end of the interconnect body mates with a castellated socket flange secured to a tool module end.

30 13. The tool module interconnect of claim 11 wherein the other end of said interconnect body is a flat end which mates with a flat flange secured to a tool module end.

14. The tool module interconnect of claim 11 wherein the assembled castellated joint secures said interconnect body from rotating during assembly and use to prevent thereby twisting of said wire harness.
- 5 15. The tool module interconnect of claim 1 wherein the connected interconnect and tool module forms a continuous exterior profile.